Appeal Brief

In response to Final Office Action of July 15, 2003



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On: Feb 13, 2003

By: Amparo Tamayo

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IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

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| Appl. No. | : | 10/022,396 |
| Applicant(s) | : | Dirne, F. |
| Filed | : | October 30, 2001 |
| Title | : | MAGNETIC HEAD HAVING A WEAR-RESISTANT LAYER, AND METHOD OF MANUFACTURING SUCH A MAGNETIC HEAD |
| TC/A.U. | : | 1753 |
| Examiner | : | McDonald, R. |
| Atty. Docket | : | N-14359C |

## APPEAL BRIEF under 37 C.F.R. § 1.192

Mail Stop Appeal Brief-Patents
Honorable Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Final Office Action of July 15, 2003, please accept the following Appeal Brief in the above referenced application.

**Real Party In Interest**

The real party in interest is the Assignee, U.S. Philips Corporation, 100 E. 42nd Street, New York, New York 10017.

**Related Appeals and Interferences**

None.

**Status of Claims**

Claims 1-5 are cancelled, claims 6-8 are pending and allowed, and claims 9 and 10 are pending and appealed.

**Status of Amendments**

No amendments were filed subsequent to final rejection.

**Summary of Invention**

A magnetic head for reading magnetic media is manufactured by depositing or forming a first layer 31 on a head face 5 (spec., page 7, lines 5-6; Fig. 2) after which a second layer 33 is deposited or formed on first layer 31 (spec., page 7, lines 6-8; Fig. 2). The first layer is mainly of a material selected from the group consisting of Ti, Zr, Hf, V, Nb, Ta, Al, and Zn (spec., page 7, lines 31-33), while the second layer includes a material selected from the group consisting of chromium oxide, chromium nitride, hafnium nitride, titanium nitride, chromium carbide, titanium carbide, and tungsten carbide (spec., page 7, lines 25-31). The first layer has a thickness of between 1 nm and 20 nm, and the second layer has a thickness of between 10 nm and 100 nm (spec., page 3, lines 1-2). Thus, different materials are present in different areas of the head face, with the first layer of a first material which is more sensitive to corrosion than the materials in the head face, and a the second layer on the first layer at the transducing gap and on both sides thereof of a second material of a wear-resistant material that is more insensitive to corrosion than the first material (spec., page 2, lines 18-22).

**Issues**

Claim 9 is rejected under U.S.C. § 103(a) over Satoru et al. in view of Waldkircher. Claim 10 is rejected under 35 U.S.C. § 102(a) over Satoru et al.

**Grouping of Claims**

Claim 9 stands by itself as it is the only claim rejected under U.S.C. § 103(a), while claim 10 stands by itself as it is the only claim rejected under 35 U.S.C. § 102(a).

**Argument**

**Rejections under 35 U.S.C. § 102**

Claim 10 is rejected under 35 U.S.C. § 102(a) over Satoru et al. The fundamental requirement of anticipation is that a single prior art reference must disclose each and every element of the claimed invention. See, e.g., *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760 (Fed. Cir. 1983), *cert denied*, 465 U.S. 1026 (1984). Additionally the elements must be disclosed or inherent, *Tyler Refrigeration v. Kysor Indus. Corp.*, 777 F.2d 687 (Fed. Cor. 1985), and be arranged as in the claim in issue, *see, e.g., Connel v Sears, Roebuck & Co.*, 722 F.2d 1542 (Fed. Cir. 1983). A reference which fails to meet this standard does not anticipate an invention. In other words, a rejection of a claim under Section 102 is sustainable only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

The Examiner is making an unwarranted assumption that the outer surface layer in Satoru et al. has to be more corrosion resistant because it protects. The Examiner has presented no evidence to support his assumption. If we look to the Satoru et al. reference itself, we find that the reference is silent regarding corrosion resistance. Claim 10 specifically recites, "forming a first layer on said head face of a first material which is more sensitive to corrosion than said materials in said head face; and forming a second layer on said first layer at said transducing gap and on both sides thereof of a second material of a wear-resistant material that is more insensitive to corrosion than said first material." Satoru et al. makes no mention whatsoever of corrosion or sensitivity to corrosion. The Examiner is simply stating a conclusion without any evidence in the reference to support the conclusion, which is not permitted. The mere assertion of the Examiner is not itself prior art. *In re Rijckaert*, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). Accordingly, the rejection of claim 10 under 35 U.S.C. § 102(a) should be reversed.

**Rejections under 35 U.S.C. § 103**

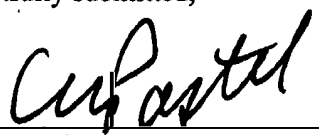
Claim 9 is rejected under U.S.C. § 103(a) over Satoru et al. in view of Waldkircher. To sustain a prima facie rejection under 35 U.S.C. § 103(a) there must be some suggestion or motivation, either in the references themselves of in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *Carela v. Starlight Archery*, 231 USPQ 644 (Fed. Cir. 1986). The prior art must suggest the desirability of the claimed invention, and the fact that references can be combined or modified is not sufficient to sustain a rejection under 35 U.S.C. § 103(a). *Ex parte Kranz*, 19 USPQ2d 1216, at 1217-1218 (1990). *See also, Ex parte Levengood*, 28 USPQ2d 1300, 1301, (Bd. Pat. App. & Int. 1993).

Waldkircher discloses applying a wear-resistant layer of titanium nitride, with a thickness of at least 200 nm ("ist als 0,2 µm", page 5 line 3 of the German published application), directly to a magnetic head, whereas Satoru et al. discloses applying a BN layer, with a thickness labeled only as a "thin film", on top of a middle layer which contains one or more of the groups IIIb, IVa, and IVb elements. The middle layer has a thickness of from 1-500 nm, which in turn is applied to the magnetic head. A combination of the prior art references thus yields a layer directly on the head which is at least 200 nm thick (Waldkircher) or 1-500 nm thick (Satoru et al.) and made of either titanium nitride (Waldkircher) or boron nitride (Satoru et al.), with a thin boron nitride film on top having either "high hardness c-BN or w-BN having superior thermal and chemical stability" (Satoru et al.).

In contrast, claim 9 of the present application recites "depositing a first layer comprising mainly a material selected from the group consisting of Ti, Zr, Hf, V, Nb, Ta, Al, and Zn on a head face of the head; and depositing a second layer on the first layer, wherein the second layer comprises a material selected from the group of chromium oxide, chromium nitride, hafnium nitride, titanium nitride, chromium carbide, titanium carbide, and tungsten carbide; wherein the first layer has a thickness of between 1 nm and 20 nm, and the second layer has a thickness of between 10 nm and 100 nm." Note that there is no boron nitride (Satoru et al.) recited in claim 9. Note also that the only titanium nitride (Waldkircher) in claim 9 is in the second layer and not in the layer deposited directly on the head.

There is no motivation found in Waldkircher to use a middle layer as used by Satoru et al., nor is there any motivation found in Satoru et al. to use a material other than boron nitride as the outer layer. Satoru et al. specifically states (in the Constitution portion of the PAJ document) that the boron nitride film has about a 1-60 ratio of B to N and contains high hardness c-BN or W-BM having superior thermal and chemical stability. There is certainly no mention that other materials would be suitable. In addition to not disclosing a middle layer, Waldkircher specifically states that the titanium nitride layer is at least 200 nm thick, whereas claim 9 of the present invention specifically recites that the second layer is between 10 nm and 100 nm. In short, there is nothing in either reference that would lead one of ordinary skill in the art to combine the features as selected for the rejection. Note that using the at least 200 nm layer of Waldkircher instead of the BN layer of Satoru et al. still would not produce the thickness limitations as required by claim 9. The references, taken as a whole, cannot therefore be said to suggest the claimed subject matter. Accordingly, the rejection of claim 9 under 35 U.S.C. § 103(a) should be reversed.

Respectfully submitted,



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## APPENDIX OF CLAIMS

Listed below are the claims involved in the appeal:

9. A method of manufacturing a magnetic head, comprising the steps of:

depositing a first layer comprising mainly a material selected from the group consisting of Ti, Zr, Hf, V, Nb, Ta, Al, and Zn on a head face of the head; and

depositing a second layer on the first layer, wherein the second layer comprises a material selected from the group of chromium oxide, chromium nitride, hafnium nitride, titanium nitride, chromium carbide, titanium carbide, and tungsten carbide;

wherein the first layer has a thickness of between 1 nm and 20 nm, and the second layer has a ~~thickness of between 10 nm and 100 nm.~~

10. A method of manufacturing a magnetic head, comprising the steps of:

providing a head structure with a transducing gap, said transducing gap terminating in said head face, wherein different materials are present in different areas of said head face;

forming a first layer on said head face of a first material which is more sensitive to corrosion than said materials in said head face; and

forming a second layer on said first layer at said transducing gap and on both sides thereof of a second material of a wear-resistant material that is more insensitive to corrosion than said first material.